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One Health One Medicine One World: Co-joint of Animal and Human Medicine with Perspectives, A review

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Abstract

Human and veterinary medicine have many commonalities. The split into distinct disciplines occurred at different times in different places. In Europe, the establishment of the first veterinary university toward the end of 18th century was triggered by ravaging renderpest epidemics and the increasing importance of live stock for draft, food, supply and war fare. Given this background, would it make sense to combine human, animal, traditional, and modern medicine in health care provisions especially in less developed countries? Such a one health one medicine approach would enhance biomedical progress, improve the outreach medical and veterinary serves especially in remote areas, after great choices to patients and make health care more culturally appropriate on the hand, it would require generality rather than specialists. Because rare diseases may go unrecognized. The commonalities of human and veterinary medicine and the financial constraints many governments are presently facing are arguments in favor of a one health one medicine approach, while status thinking, education system, administrative structures and legislation hinder its implementations. Gradually, change in education and training, the creation of institutional linkages, and the removal of legal barriers could help overcome obstacles.
Key words: Human Medicine, Veterinary Medicine, One Health, One Medicine, One World.

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Introduction

Human and animal medicine interface at many points. These include basic principles of medical sciences, research on disease causing organisms, disease transmission and diagnostic treatment methods are to name a few. Also whether in developed or less developed countries, alternative practices including traditional, indigenous and local ones are gaining importance and recognition in both medicines. Given these commonalities, might it make sense to combine elements of human, animal, traditional and modern medicine in health provisions especially in least developed countries (Mathias, 1998).

Down through history, medical practitioners have often treated both human and animals. Typically, they specialized in certain problems (example bonesetters) or treatment types (example herbalists) rather than in a given species (Schwab, 1996). The split between human and veterinary medicine that is today taken for granted in developed countries occurred at different times in different places (Arjaria, 1996). In most least developed countries, however, the spilt into human and animal medicine has occurred only partially, because traditional medical systems which usually embrace all species continue to exist alongside modern ones (Mathias, 1998).

The one health initiative was formed in 2007 by American medical association and American veterinary medical association to promote, improve and defend the health and well being of all species by enhancing cooperation and collaboration between physicians, veterinarians and scientific health professionals. Many public health professionals also view environmental health as essential to the purpose of one health. The basic idea is that human health could not be protected unless animal health and environmental health are also addressed (Slenning, 2010).

Recent incidents involving emerging zoonotic diseases and public health consequence of environmental degradation have led toughen calls for veterinary medicine, human medicine, and environmental health approaches to be combined and prioritized. One means to explore the health perspective is to assess Global Climate Change (GCC), since GCC affects the environment on which humans and animals, as well as the disease vectors and pathogens affecting both groups. The objective of this review is to provide

an overview on how to improve the lives of humans and animals through integration of human medicine and veterinary medicine and address some of the links between veterinary and human medicine (Slenning, 2010).

Past and Present In Human and Animal Medicine

In history, medical practitioners have often treated both people and animals. Typically, they specialized in certain problems rather than in a given species for example ancient Egyptian healer priests applied the practical medical knowledge they gained from dissection of scarification bulls to humans as well (Schwab, 1996).

The split between human and veterinary medicine that is today taken for granted in developed countries occurred at different times in different places if, indeed, it occurred at all. In India, the first veterinary clinic was founded in the third century BC (Anjaria, 1996). In Europe the first indication of the split date about 200BC (Von Driesch, 1989). Still for a long time, European medical practitioners continued to treat all species .The was true in frontier America (McCorkle, 1998).

Not until 1762 was the first veterinary university founded in the western world at Lyons in France (Schwab, 1984). Now days in addition being taught in different universities or faculties being practiced in different faculities, human and animal medicine are separated by law in a some developed countries. For instance, German veterinarians are not permitted to treat people except in emergencies cases (Michael, 2010). In most least developed countries, however, the split into human and animal medicine has occurred only partially, because traditional medical systems, which usually embrace all species, continue to exist alongside modern ones (Mathias, 1998).

Traditional systems prevail especially in remote areas where local healers are the only health care providers accessible to people and their animals. Where modern medicine is available, it is divided into human n and veterinary medicine as in developed conutries. The two medicines are taught and practiced at different facilities, mainly in cities and by government program and big projects. In least developed countries, university education and public health and veterinary services have almost universally been modeled on those of donor countries, with little consideration given to the host country's particular cultural, economic, and other conditions. Indeed, whether in least developed or developed there is growing dissatisfaction with convectional system health care services transferred without modification from other countries are difficult and expensive to maintain and do not meet the need of the bulk of the population (Mathias, 1996).

One Health

One healthy is a contemporary term describing the collaboration of varies scientific disciplines in the pursuit of better health for humans, animals, and ecosystems. It is an emerging area of professional practice arising the recognition of the growing inter connection and overlap economic, cultural, and physical of the constituents. One health understands that humans do not exist in isolation, but are part of the larger, total living ecosystem, and that activities and condition of each member affect the others (Scott, 2008).

The interconnectedness of human ,animal, and environmental health is at the heart of one health, an increasingly important prism through which governments, non governmental organizations, and practitioners view human health. An important implication of one health approach is that integrated policy interventions that simultaneously and holistically address multiple and interacting causes of poor human health, unsafe and scarce water, lack of sanitation, food insecurity, and close proximity between animals and humans will yield significantly larger health benefits than policies that target each of these factors individually in isolation (Clifford and Coppliloo, 2009).

One health seeks to solve to shift the paradigm the current individual or disease centered approach to a system or community based. It is a creative way to view human, animal and ecosystem health practitioners and environmental scientists in a collaborative and synergistic effort. The concept of one health is defined as the collaborative effort of multiple disciplines, working locally, nationally and globally, to reach optimal health for humans, animals, and the environment (American Veterinary Medicial Association and Western Veterinary Conference, 2008).

Every day thousands of children and adults die from under diagnosed diseases that have arisen at human-animal–environment interface, especially diarrhea and respiratory diseases in developing countries (Clifford and Copplillo, 2009). Explosive human population in growth and environmental changes have resulted in increased numbers of people living in close contact with wild and domestic animals. Unfortunately, this increased contact together with changed in land use, including livestock grazing and

crop production have altered the inherent ecological balance between pathogens and their human and animal hosts. In fact zoonotic pathogens, such as influenza and severe acute respiratory syndrome account for the majority of infectious diseases in people and more than three quarter of emerging zoo noses are the result of wild life origin pathogens (Deolalikar, 2009).

The one health concept promotes the integration of human, animal and environmental health by communication collaboration among multiple disciplines. Successful one health examples during the late 19th century include, anthrax, tuberculosis immune system (Kaplan and Echols, 2009).

One Health Veterinary Issue That Demand Attention

Zoonotic Disease: Zoonotic disease are those passed between human and animals. Lyme diseases, hantavirus, bovine spongiform encephalopathy (colloquially known as 'mad cow disease), and avian influenza are typical examples. Emerging zoonotic diseases are those caused by new agents or by previously known agents appearing in places or species in which diseases are on the rise ,due a large part to a sharply increasing human population and its expansion into new areas. Seventy five percent of emerging infectious diseases over the past ten years have been caused by pathogens originating from animals or their products. Veterinarians find themselves on the front lines in recognizing, diagnosing, and responding to these diseases (Clifford and Coppolillo, 2009).

Food Safety: Our dependence for plants and animals for food increases as rapidly as the human population expands . The demand for food expected to increase by 50% before 2020. Its increasing important to provide safe and adequate food and water for the world as the global population to the brink of seven billion consumers. Veterinarians have the expertise to address food production practices, ecosystem management and microbial contamination problems associated with food safety (Scott, 2008).

Public Health: Changes inland and water use, over grazing, encroachment of farming and human activities ion to wild life habitat, suwage pollutants, and induce toxins contribute to the threats and degradation of environmental resources that sustain life. Global trading mass transportation, industrialization of food processing, altered tropism (organism's natural response to stimuli) also contributes to the increasing pressure and spread of diseases and contamination. Veterinarians, their education in multi- and cross species biological interactions, clinical approaches, and preventive medicine make ideal and critical public health collaborators (American Veterinary Medicial Association and Western Veterinary Conference, 2008).

Wild Life: Seventy five percent of infectious agents originate from endemic including wild life. Human oncorochment into wild life habitats invites these infectious agents to become pathogen for human populations. It important to identify the routes by which these agents find their way to the human host and to understand their impact on the animals that serve as the primary and intermediate hosts veterinarians are in a unique position to deploy their back grounds and understanding of animal diseases to identify, manage and control these diseases (Jones, 2009).

Disaster Preparedness: The challenge to be better prepared for natural and manmade disasters is a huge concern for all, but veterinarians are in a unique position to appreciate the implication of disasters on both human and animal communities. Currently the over whelming majority of disaster relief efforts are targeted only but veterinarians understand the extricable link between humans and animals. Drawing on their knowledge of animal epidemiology, health husbandry, and behavior, veterinarians can uniquely contribute to improving quality of life for both animals and humans in the event of disaster (Jones, 2009).

Antimicrobial Resistance: The emergency and spread of antimicrobial resistance among bacteria, virus, and other disease causing organisms is treating our ability to combat infectious diseases. Past miss use and poor understanding of antimicrobials have accelerated the natural evolution of pathogenic organisms to be resistant. The result today is that our weapon against these organisms is losing power. Even though the full scope of the resistance problem is legally unknown, veterinarians are on the front of proper use, comprehensive control measures, and in antibiotic development and application (Deolalikar, 2009).

One Health Initiative

The one initiative is a movement to forge co-equal an inclusive collaborations between physicians, osteopaths, veterinarian, dentists and other scientific health a and environmentally related disciplines, including the American society of tropical medicine a and hygiene, the center for disease control prevention, Center for Disease control and prevention, United States Department of Agriculture, National (Mathias,

Environmental Health Association. Additionally more than 535 prominent scientists, physicians and veterinarians worldwide have endorsed the initiative (Mathias, 1998).

Coordination of wild life, environmental, human and domestic health sectors improves our ability to peredveny disease events rather than simply reacting them. Prevention is always preferable to control because it actively avoids the impact of diseases and some control methods have negative social environmental results (Western Veterinary Conference, 2008).

Combating zoo noses effectively will require a one health approach an inter disciplinary Collabra tive model for prevention and control of infectious diseases epidemics, as well as chronic illness that affect humans and animals. Physicians, veterinarians, ecologists, environmental scientists, laboratory animal specialists, and other health science-related disciplines must work together, equally with regard to 'turf' barriers (Kaplan and Echols, 2009).

One Medicine

The concept of one medicine has been discussed for many years, but for all practical purposes and despite the ongoing discovers of numerous commonalities in the physiology and pathophysiology and human and veterinary medicine thinks one medicine concept was lost and the human and veterinary medical disciplines developed into separate professions (Western Veterinary Conference, 2008). One reason for the split is that over time societies have grown more populous, complex and demanding (Mathias, 1998).

The veterinarian is the only health care professional likely to see both people and their animals. So he\she therefore has awareness of the potential threat of zoonotic diseases and has the ability and responsibility for detections zoonotic\emerging diseases. Fortunately, veterinarians have considerable training in comparative medicine, zoonoses, and public health. Physicians on the other hand do not receive extensive training in comparative medicine and zoo noses. Therefore veterinarians are in abettor position to discover public health threats than are physicians. The are also in ideal position for in establishing a disease surveillance system using pets as sentinels of disease exposure in the home environment and in the world. In addition veterinarians in companion animal practice would work together with family physicians and introduced to veterinarians as well (American Veterinary Medical Association and Western Veterinary Conference, 2008).

Veterinarians regardless, their of field of practice all play a significant role in human health and animal health. The future will most likely bring more collaboration of veterinarians from all fields with multiple professionals such as public health, human medicine bio-engineering, animal science, environmental science, and wild life. Together, we are strong to fight disease and we arte indeed, wiser (American Veterinary Medical Association and Western Veterinary Conference, 2008; Michael, 2010).

Components of the One- Medicine Concept

The following constitute basic activates of modern medicines whether human or veterinary. Clinical services, epidemiological surveillance, disease control, (forexample diagnostic, vaccination, quarantine and others), research, health education and extension, and administration (Mathias, 1998).

Integrating Human and Veterinary Medicine: If there has been good historical reason for health care separation and specialization, what would be the advantage of returning to the one medicine concept and more over, expedites it to include traditional and well as modern theory and practices (Mathias, 1998).

Advantages of Integration: Combining human and animal medicine can stimulate greater progress, in bio-medical knowledge as whole, greater efficiencies in disease control. In large part, this is because the principle of basic bio- medical science is the same for both disciplines (Kaplan and Echols, 2009). Of course, there are subjects, findings, procedures, and experiences specific to each. For example, veterinary training covers multiple species, where as physicians training usually deals with only one (humans). Veterinary science also touches on some non – medical fields that are no parallel in human medicine such as food processing or agriculture. Multi disciplinary teams of doctors and veterinarians would be better able to tackle complex, multiface, research and disease control problems than unidisciplinary teams. For rural populations in poorer nations, implementing the one-medicine concept can potentially improve expand cost-effective care services for all species (Mathias, 1998).

One World: About two- third of (60.3%) excutive information and dicision suport result from zoonoses; the majority of these has their origin in wild life (71.8%) and has been increasing in recent years. The researchers found that over 50% (54.3%) of excutive information and dicision events were due to bacteria, and their data base included a large number of drug resistant organisms. The major finding was that there was a high correlation between excutive information and dicision origins and socio-economic, environ-

mental, and ecological factors, thereby providing a mechanism by which areas called emerging disease hot spots where excutive information and dicision system are most likely to originate. The researches also demonstrated that lower latitudes were the regions where there was a combination of a high risk of zoonotic and vector borne excutive information and decision in wild life and allow reporting effort. According to the authors, global resources to combat the emergence of infectious diseases are not well allocated as most of the research and surveillance activities are occurring in countries that do not fit the predicted sites from which new diseases are likely to emerge (Walsh, 2009).

Human serve as a primary reservoir for only 3% of known zoonotic pathogens. Yet the capability to identify out breaks of disease relies on identification of human cases. Effective surveillance of zoonotic pathogens and control of the diseases the cause requires integration across human and animal populations. Such integration lacking in contemporary veterinary and medical communities (Walsh, 2009; Western Veterinary Conference, 2008).

The recall of melamine contaminated pet food how small the global market. The action is taken by only protein suppliers in China affected a large number of pet food suppliers in the United state and Canada and created a nationwide animal and food crisis in both countries the food and drug administration listed more than 1100 entries on a spread sheet of recalled pet food products. This situation clearly showed how relatively few suppliers shipping large amount of a product to the United state and Canada can have a huge impact. Travel by air and transportation by water have connected all countries into one world. Micro organisms can travel by plan across the world in time shorter than their incubation periods. A quote by Lonnic king taken from the plenary session of the Western Veterinary Conference in Vancouver summarizing this notion is that 'nowhere is remote and No one is disconnected (American Veterinary Medical Association and Western Veterinary Conference, 2008).

Perspectives

Public health perspective: Public health emergence declared to the newly emerged 'swine flu' virus (H_1N_1) was recently classified as a worldwide pandemic.This is definitely an indication of impending similar 'brewing storms'. Since 1998, public health officials and scientists have been speculating about thinks with the avian flu (H_5N_1) virus strain. These influenza events, plus the fact that approximately 75% of recently emerging infectious diseases affecting humans arte diseases of animals origin, strongly suggest the need for a paradigm change on how public health approaches these phenomena called' zoonotic diseases', that means diseases transsimisable from animal to human (Kaplan and Echols , 2009).

Zoonotic Enterohaemorrhagic escheirchi coli and *Methicillin-resistant Staphylococcus aureus* are an excellent example of the one health as they can reciprocally affects human and animal populations (Monath *et al.*, 2010).

Veterinary Perspective: As a state agricultural veterinarian and noted authors with international experience Sherman (2010) documents a case for a multidisciplinary approach from an agricultural point of view. He argues that veterinarians by virtue of their formal training in comparative medicine and population medicine, are well positioned to embrace the concept of one health and take a leadership role in moving it forward as a rational approach to addressing issues of health and disease in today's complex , global society'. We second this point and hope that steps forward arte made sooner rather than later (Monath and Kahn, 2010).

Threats and Opportunities

Threats: In developed countries, where a much wider range of human and animal disease is regularly tested for, establishing non-diagnostic laboratories. Everywhere promoting wide spread recourse to herbal medicines without first determining possible negative impacts (forexample; over harvesting) on the plant species. (Western Veterinary Congrense, 2008; Mathias, 1998).

Opportunities: Combing vaccination, campaigns for human and animals in difficult expensive to reach rural areas especially in least developed countries. In the same contexts, combing disease surveillance efforts for human and animal diseases (Mathias, 1998). Tapping stock raisers' knowledge in disease surveillance, training midwives to assist both humans and animals to rural areas especially stock raisers, disseminating simple hygiene and other basic self care techniques that apply across humans and animals (Monath *et al*., 2010).

Conclusion and Recmmendations

Options regenerated by one-health one –medicine concept offer opportunities for approaches to heath delivery, especially in least developed countries. Picking and choosing from different options, governments and private sector providers could craft combination solutions that are tailors to the particular

health care problems of different clienteles, as to human and financial resources available. However, along with more (and more sensitive) economic assessment, putting the one medicine principle into practice will call for flexibility, familiarity with local conditions, and a wilgness to overcome obstacles. The one health concept is a global strategy that is expanding within public health and academic circles. However, it is not widely known among practicing physicians, veterinarians, newsmedia or the general public. Once implemented, the synergisms achieved will advance health care for the 21st one century and beyond by accelerating bio-medical research discoveries, enhancing public health efficacy, expeditiously expanding the scientific knowledge base and improving medical education and clinical care seeking essential practicable 'out of the box' scientific knowledge will most likely require amid merging of various perspectives from within human and veterinary medical disciplines as well as others.

Based on the conclusion the following points are recommended: Education and advocacy are needed among decision makers in health care provisions; such as government officials and development planners; health care providers such as doctors, veterinarians, nurses, healers, midwife and field staff of non-governmental organizations; and the clienteles of health care provisions. Training courses for medical and veterinarians and other health providers need to be re designed to take account of, and put use integrative possibilities. Universities curricula in all nations need to emphasize the commonalities between human and animal medicine, and work to break down barriers between them. Medical and veterinary colleges should incorporate useful perspectives and treatments from traditional medicine into their curricula. Joint educational efforts between human medical, veterinary medical schools, and schools of public health and the environment; Joint communication efforts in journals, at conferences, and via allied health net works; Joint efforts clinical care through the assessment, treatment and prevention of cross species disease transmission; Joint cross species disease surveillance and control efforts in public health; Joint efforts in better understanding of cross species disease transmission through comparative medicine and environmental research. Joint efforts in the development and evaluation of new diagnostic methods, medicines and vaccines for the prevention and control of diseases across species and; Joint efforts to inform and educate political leaders and the public sector through accurate media publications.

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